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	L3	6063375.pn.	1
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L1: Entry 1 of 1

File: USPT

Feb 13, 2001

US-PAT-NO: <u>61</u>87307

DOCUMENT-IDENTIFIER: US 6187307 B1

TITLE: Cancer immunotherapy with semi-allogeneic cells

DATE-ISSUED: February 13, 2001

INVENTOR-INFORMATION:

NAME

CITY

STATE

ZIP CODE

COUNTRY

Cohen; Edward P.

Chicago

 II_{I}

US-CL-CURRENT: 424/93.21; 424/93.71, 435/325, 435/366, 435/372, 435/455, 536/23.5

CLAIMS:

What is claimed is:

- 1. A semi-allogeneic immunogenic cell for administration to an animal recipient, which comprises an antigen-presenting cell expressing at least one class I MHC or class II MHC determinant that is syngeneic to the recipient and at least one class I or class II MHC determinant that is allogeneic to the recipient, wherein said antigen presenting cell is transformed with and expresses DNA coding for at least one antigen, and wherein said antigen or a part thereof, when complexed with said MHC class I or class II determinant at the cell surface, is recognized by T cells.
- 2. A semi-allogeneic immunogenic cell for administration to an animal recipient, which comprises an antigen-presenting cell expressing at least one class I MHC or class II MHC determinant that is syngeneic to the recipient and at least one class I or class II MHC determinant that is allogeneic to the recipient and wherein said antigen presenting cell is transformed with and expresses DNA isolated from a neoplasm or a tumor of the recipient.
- 3. The semi-allogeneic immunogenic cell of claim 1 or 2, wherein said antigen presenting cell is further transformed with a coding sequence for at least one cytokine.
- 4. The semi-allogeneic immunogenic cell of claim 3 wherein the cytokine is selected from the group consisting of interleukin-1, interleukin-2, interleukin-3, interleukin-4, interleukin-5, interleukin-6, interleukin-7, interleukin-8, interleukin-9, interleukin-10, interleukin-11, interleukin-12, interferon-.alpha., interferon-.gamma., tumor necrosis factor, granulocyte macrophage colony stimulating factor, and granulocyte colony stimulating factor.
- 5. The semi-allogeneic immunogenic cell of claim 1 or 2, wherein the antigenpresenting cell is selected from the group consisting of a fibroblast, a

macrophage, a B cell, and a dendritic cell.

- 6. The semi-allogeneic immunogenic cell of claim 2, wherein the neoplasm is selected from the group consisting of melanoma, lymphoma, plasmocytoma, sarcoma, glioma, thymoma, leukemias, breast cancer, prostate cancer, colon cancer, esophageal cancer, brain cancer, lung cancer, ovary cancer, cervical cancer, and hepatoma.
- $7.\ {
 m The\ semi-allogeneic\ immunogenic\ cell}$ of claim 2 wherein the DNA isolated from a neoplasm or tumor comprises coding sequences for tumor associated antigens.
- 8. The semi-allogeneic immunogenic cell of claim 2 wherein the DNA isolated from neoplastic cells comprises coding sequences for tumor associated antigens that are associated with a tumor, wherein said tumor is selected from the group consisting of melanoma, lymphoma, plasmocytoma, sarcoma, glioma, thymoma, leukemias, breast cancer, prostate cancer, colon cancer, esophageal cancer, brain cancer, lung cancer, ovary cancer, cervical cancer, and hepatoma.
- 9. A therapeutic composition comprising the semi-allogeneic immunogenic cell of at least one of claims 1, 2, 7, or 8 admixed with a therapeutically acceptable carrier.
- $10.\ A$ therapeutic composition comprising the semi-allogeneic immunogenic cell of claim 3 admixed with a therapeutically acceptable carrier.
- 11. A therapeutic composition comprising the semi-allogeneic immunogenic cell of claim 4 admixed with a therapeutically acceptable carrier.
- 12. A therapeutic composition comprising the semi-allogeneic immunogenic cell of claim 5 admixed with a therapeutically acceptable carrier.
- 13. A therapeutic composition comprising the semi-allogeneic immunogenic cell of claim 6 admixed with a therapeutically acceptable carrier.
- 14. A semi-allogeneic immunogenic cell for administration to an animal recipient, which comprises an antigen-presenting cell expressing at least one of class I or class II MHC determinants, wherein said antigen presenting cell is genetically selected such that at least one of said class I MHC or class II MHC determinants is syngeneic to the recipient and at least one of said class I or class II MHC determinants is allogeneic to the recipient, wherein said antigen presenting cell expresses at least one antigen, and wherein said antigen or a part thereof, when complexed with said MHC class I or class II determinant at the cell surface, is recognized by T cells.

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<u>#57</u> R	Related Articles for PubMed (Select 6189910)	18:55:13	298
<u>#62</u> R	Related Articles for PubMed (Select 6974704)	18:49:09	677
	earch #54 AND semiallogeneic	18:42:48	4
	celated Articles for PubMed (Select 9510195)	18:42:19	111
	elated Articles for PubMed (Select 9439644)	18:37:19	186
<u>#47</u> Se	earch Co-expression of immunogenic	18:24:25	1
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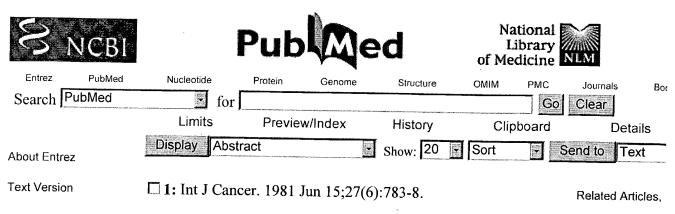
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Adoptive transfer of immunity induced by semi-allogeneic hybricells, against a murine fibrosarcoma.

Payelle B, Poupon MF, Lespinats G.

Semi-allogeneic somatic hybrid cells derived from the fusion of a C57BL/6 fibrosarcoma (MCB6-1) and A9 cells (C3H origin) were used to immunize C57BL/6 mice against the parental tumor cells. These hybrid cells expressed histocompatibility antigen of both parental cells (H-2b and H-2k), and failed produce tumors in normal C57BL/6 mice. A single i.p. injection of hybrid ce induced anti-tumor immunity which could be transferred to normal C57BL/6 recipient mice by immune spleen or peritoneal cells; the efficient cells were cells, as this activity was completely abrogated by treatment with anti-Thy-1. antiserum and complement. Among immune splenic T cells, only the lightdensity T cells, obtained after fractionation on Percoll gradient, were effectiv the transfer of immunity. Immunity induced by the hybrid cells was specific MCB6-1 parental tumor cells. This immunity could be transferred during two brief periods, 7 to 12 days, and 40 to 50 days, after hybrid cell injection; ther appeared to be an intermediate period, 12 to 40 days after immunization, dur which no immunity could be transferred. These results suggest a suppressive mechanism implicated during hybrid cell immunization and interacting with anti-tumor immune response.

PMID: 6974704 [PubMed - indexed for MEDLINE]

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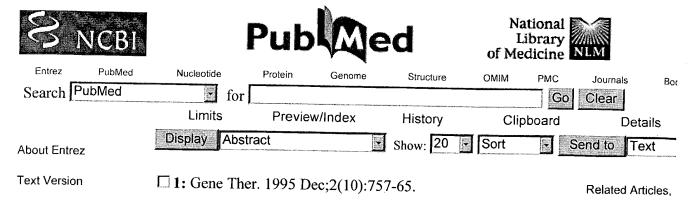
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Expression of two H-2K genes, syngeneic and allogeneic, as a strategy for potentiating immune recognition of tumor cells.

Mandelboim O, Vadai E, Feldman M, Eisenbach L.

Department of Cell Biology, Weizmann Institute of Science, Rehovot, Israel.

Metastatic clones of some tumors manifest an impaired expression of class I major histocompatibility complex (MHC) antigens. High metastatic, low immunogenic Lewis lung carcinoma clones (C57BL-H-2b origin) express lo levels of the H-2Kb MHC antigen. These cells metastasize spontaneously in C57BL/6J mice. Transfection of syngeneic or allogeneic H-2K genes conversuch cells to the nonmetastatic state, but did not prevent the growth of the loc tumors. Transfection of two H-2K genes, syngeneic and allogeneic, into the highly metastatic clone D122, resulted in reduction of the growth rates of the transfectants and protected the mice from D122 metastases. In contrast, cells transfected with a single class I gene (syngeneic or allogeneic) gave partial protection, or did not protect the mice at all from D122 metastases. The combination of syngeneic and allogeneic genes in the same tumor cell elevate the immunogenic properties of the expressing cells and potentiated the immu response as was demonstrated by in vitro cytotoxicity analysis and by limitin dilution cytotoxicity analysis. Increased immunogenicity by double transfect may constitute an effective therapeutic modality.

PMID: 8750016 [PubMed - indexed for MEDLINE]

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Immunity to B16 melanoma in mice immunized with IL-2-secret allogeneic mouse fibroblasts expressing melanoma-associated antigens.

Kim TS, Russell SJ, Collins MK, Cohen EP.

Department of Microbiology and Immunology, University of Illinois College Medicine, Chicago 60680.

Co-presentation of weak tumour-associated antigens along with strongly immunogenic determinants leads to the development of an anti-tumour immu response in recipients syngeneic with the tumour. Tumour immunity develop mice immunized with tumour cells modified by the introduction of cDNA for interleukin-2 (IL-2). Here, we report the anti-tumour response following immunization with an IL-2-secreting cell construct that expresses tumourassociated antigens, along with allogeneic major histocompatibility antigens. The construct was prepared by transfecting LM(TK-) mouse fibroblasts (H-2 with genomic DNA from B16 melanoma cells syngeneic in C57BL/6J mice (2b). Transfectants expressing melanoma-associated antigens (MAA) were the infected with an expression-competent retroviral vector containing a cDNA specifying human IL-2. Cytotoxicity toward B16 cells was detected for as lor as 5 months in both spleen and macrophage cell populations in C57BL/6J mi immunized with the IL-2-secreting cells. Mice immunized with non-IL-2secreting, MAA-positive allogeneic cells developed melanoma immunity as well, but to a lesser extent. Immunity to 2 tumour-cell lines expressing the H haplotype and to YAC-1 cells was detected in peritoneal macrophages, but no spleen cells from C57BL/6J mice immunized with the cell construct, indicati that the response to B16 cells was only partially specific. C57BL/6J mice immunized with the IL-2-secreting cell construct survived significantly longe following an injection of viable B16 cells, than mice in various control group The contribution of allogeneic antigens to the melanoma immunity was indic by the failure of mice syngeneic with LM(TK-) cells to develop melanoma immunity following immunization with non-IL-2-secreting, MAA-positive c constructs. The formation of IL-2 partially compensated for the lack of allogeneic antigens.

PMID: 1533203 [PubMed - indexed for MEDLINE]

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Immunity to melanoma in mice immunized with transfected allogeneic mouse fibroblasts expressing melanoma-associated antigens.

Kim YS, Slomski R, Cohen EP.

Department of Microbiology and Immunology, University of Illinois College Medicine, Chicago 60680.

Transfection of genomic DNA from B16 mouse melanoma into LM(TK-) fibroblasts led to the generation of several clones of transfected cells that strongly expressed B16 melanoma-associated antigens (MAA). The transfect cells retained their H-2k markers and served as allogenic cells with expressiv MAA in C57BL/6 mice, syngeneic with the melanoma. The cells were capab of eliciting primary anti-B16 immune responses in vitro in spleen cells from C57BL/6 mice. Immunization of C57BL/6 mice with the transfected cells led the generation of anti-B16 cytotoxic activity in spleen cells, and C57BL/6 mi immunized with the MAA-positive transfected cells were partially resistant to lethal challenge with B16 melanoma cells. Under similar conditions, B16 cell were nonimmunogenic. Therefore, transfected allogeneic LM(TK-) fibroblas cells expressing MAA served as more potent anti-melanoma immunogens that the parental B16 tumor cells themselves.

PMID: 1756533 [PubMed - indexed for MEDLINE]

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☐ 1: Int J Cancer. 1992 May 8;51(2):283-9.

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PMID: 1533203 [PubMed - indexed for MEDLINE]

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	L15	L14 and "antigen presenting cell" or APC	15832
	L14	L13 and (genomic near10 DNA)	370
	L13	syngeneic near10 allogeneic	847
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<u>#38</u>	Related Articles for PubMed (Select 3107804)	17:12:35	135
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#18 S	Search semi allogeneicimmune cells Limits: Publication Date to 1997	15:32:35	<u>3902</u>
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